

# [Air and Water Conditioning System and Filter Media]

## Abstract

Disclosed is an air–water–catalyst–UV light contacting, air heating and cooling, humidifying and dehumidifying CHAMBER, which receives water that continuously recirculates through the water filtering, heating and cooling, (and deionizing) loop, which gets fresh outdoors air through the energy–efficient heat exchanger, which generates water from the atmospheric moisture, which stores and recirculates pure water through potable water holding tank, and to which is connected a novel design energy–efficient self–regulating steam distillation apparatus. Also, a water filtration system utilizing zwitterionic polymers as ion exchange and salt–absorbing and filtration media. Also disclosed are novel ionic and zwitterionic polymers, derived from cellulose.